

- a. Rubber Gasket Joints: Use rubber gasket joints for cast iron soil pipes that meet the requirements of ASTM C 564.
- b. Lead Joints: Use refined lead that meets the requirements of ASTM B 29. Do not use reclaimed lead.
- c. Plain End Cast Iron Soil Pipe: Plain end cast iron soil pipe may be joined with steel bolted couplings if they meet the requirements of Subsection 848.2.02.

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

The Department accepts material that is properly certified by the manufacturer.

**D. Materials Warranty**

General Provisions 101 through 150.

**841.2.02 Ductile Iron Pipe and Appurtenances**

**A. Requirements**

Use ductile iron pipe that meets the requirements of ANSI/AWWA A 21.50 and A 21.51 for the class and joint specified.

1. Fittings

Use fittings that meet the requirements of ANSI/AWWA A 21.10 for the class and joint specified.

2. Rubber Gasket Joints

Use rubber gasket joints that meet the requirements of ANSI/AWWA A 21.11.

3. Flanges

Use flanges that meet the requirements of ANSI/AWWA A 21.11.

4. Plain End Ductile Iron Pipe

Plain end ductile iron pipe may be joined with steel-bolted couplings if they meet the requirements of Subsection 848.2.02.

5. Cement Mortar Linings

Use cement mortar linings that meet the requirements of ANSI/AWWA A 21.4. Line all ductile iron pipe and fittings with cement mortar unless specified otherwise.

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

The Department accepts material that is properly certified by the manufacturer.

**D. Materials Warranty**

General Provisions 101 through 150.

## **Section 842—Clay Pipe**

### **842.1 General Description**

Specifications for this work will be included elsewhere in the Contract.

## **Section 843—Concrete Pipe**

### **843.1 General Description**

This section includes the requirements for reinforced concrete pipe, nonreinforced concrete pipe, and concrete underdrain pipe.

**843.1.01 Related References****A. Standard Specifications**

Section 800—Coarse Aggregate

Section 801—Fine Aggregate

Section 831—Admixtures

Section 880—Water

**B. Referenced Documents**

AASHTO M 86( M 86M), Class II

AASHTO M 170 ( M 170M)

AASHTO M 175 (M 175M) or AASHTO M 176 (M 176M)

QPL 4

GDT 16

**843.2 Materials****843.2.01 Reinforced Concrete Pipe****A. Requirements**

## 1. Type

Use reinforced concrete pipe that meets the requirements of AASHTO M 170 (M 170M), with the changes described in the following table. For a list of sources, see QPL 4.

Material	Requirements	Other Modifications
Coarse aggregate	Subsection 800.2.01	Gradation requirements do not apply
Fine aggregate	Subsection 801.2.02	Gradation requirements do not apply
Fly ash	Subsection 831.2.03.A	None
Water	Subsection 880.2.01	None

**NOTE: Before manufacture, you may request approval of modified designs that differ from the Specifications.**

## 2. Certification

- a. File a certificate with the Engineer stating that the concrete pipe manufactured for Department use meets the requirements of reinforcement steel specified in this Section.  
A bonded legal authority of the manufacturing company shall endorse the requirements certification.
- b. Submit a guarantee with the certificate stating that concrete pipe will be replaced, without cost to the purchaser, if the reinforcement steel does not meet these Specifications.
- c. Ensure that the guarantee remains in effect as long as the manufacturer furnishes concrete pipe for Department use.
- d. This guarantee does not limit the right of the Department to inspect and check the materials in manufactured concrete pipe prior to and during pipeline construction.

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

The Department will test and inspect using GDT 16.

**D. Materials Warranty**

See the Certification requirements under Subsection 843.2.01.A.2.

**843.2.02 Nonreinforced Concrete Pipe****A. Requirements**

## 1. Type

Use nonreinforced concrete pipe to convey sewage, industrial waste, and storm water that meets the requirements of AASHTO M 86 (M 86M), Class II, with the following changes:

Material	Requirements	Other Modifications
Coarse aggregate	Subsection 800.2.01	Gradation requirements do not apply
Fine aggregate	Subsection 801.2.02	Gradation requirements do not apply
Fly ash	Subsection 831.2.03.A	None
Water	Subsection 880.2.01	None

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

Test and inspect with GDT 16.

**D. Materials Warranty**

General Provisions 101 through 150.

**843.2.03 Concrete Underdrain Pipe****A. Requirements**

## 1. Type

Use concrete underdrain pipe that meets the requirements of AASHTO M 175 (M 175M) or AASHTO M 176 (M 176M), with the following changes unless the Plans state otherwise:

Material	Requirements	Other Modifications
Coarse aggregate	Subsection 800.2.01	Gradation requirements do not apply
Fine aggregate*	Subsection 801.2.02	Gradation requirements do not apply
Fly ash	Subsection 831.2.03.A	None
Water	Subsection 880.2.01	None
*Use fine aggregate in standard strength, perforated, nonreinforced concrete underdrain pipe.		

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

Test and inspect with GDT 16.

**D. Materials Warranty**

General Provisions 101 through 150.

**Section 844—Steel Pipe****844.1 General Description**

This section includes the requirements for the following types of steel pipe and related materials:

- Corrugated steel culvert pipe and pipe arches